

COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION*Document Control Center 05/01/20@9.00 AM***APPLICATION OF****VIRGINIA ELECTRIC AND POWER COMPANY****CASE NO. PUR-2019-00128****For approval and certification of electric
facilities: Loudoun-Ox 230 kV Transmission Line
Partial Rebuild Projects****REPORT OF D. MATHIAS ROUSSY, JR., HEARING EXAMINER****May 1, 2020**

This case involves the Application of Virginia Electric and Power Company for approval to: (a) rebuild parts of eight existing 230 kilovolt electric transmission lines built in the 1960s and (b) remove one idle 230 kilovolt line and one operational 115 kilovolt line. This rebuild project would occur exclusively in an existing transmission line corridor and substations in Loudoun, Fairfax, and Prince William Counties.¹ The record of this case supports a finding that the individual and collective components of this rebuild project satisfy the legal requirements for approval.

HISTORY OF THE CASE

On August 13, 2019, Virginia Electric and Power Company d/b/a Dominion Energy Virginia (“Dominion” or “Company”) filed with the State Corporation Commission (“Commission”) an application for approval and for a certificate of public convenience and necessity (“CPCN”) to construct and operate electric transmission facilities in Loudoun, Prince William, and Fairfax Counties (“Application”). Specifically, the Application proposes rebuilding portions of the Company’s existing 230 kilovolt (“kV”) transmission Lines #2173, #295, #265, #200, #2051, #2063, #266, and #2008 and completing associated work on facilities in the Company’s Loudoun, Bull Run, Mosby, Sully, and Clifton Substations (collectively, “Rebuild Project” or “Project”).

On September 17, 2019, the Commission issued an Order for Notice and Hearing that, among other things, directed the Company to provide notice of its Application; directed the Commission’s Staff (“Staff”) to investigate the Application and file testimony and exhibits summarizing Staff’s investigation; established a procedural schedule, including a hearing in Chantilly on January 29, 2020, for the purpose of receiving public witness testimony, and a hearing at the Commission on April 22, 2020, to receive any additional public witness testimony and the evidence of the parties and Staff; provided opportunities for interested persons to intervene and participate in this case; and appointed a Hearing Examiner to conduct all further proceedings in this matter on behalf of the Commission and to file a report.²

¹ Only one proposed structure replacement is in Prince William County. Exhibit (“Ex.”) 2 (Appendix) at 181.

² On September 27, 2019, the Commission issued a Correcting Order to correct certain contact information included in the Company’s published notice.

On October 24, 2019, the Department of Environmental Quality (“DEQ”) filed its report on Dominion’s Application (“DEQ Report”).³

On November 15, 2019, Dominion filed its proof of notice.⁴

No notices of participation were filed in this proceeding.

On January 29, 2020, the public witness hearing in Chantilly was convened, as scheduled. Jennifer D. Valaika, Esquire, April M. Jones, Esquire, and David J. DePippo, Esquire, appeared on behalf of the Company. C. Austin Skeens, Esquire, appeared on behalf of Commission Staff. One public witness appeared to testify.

On March 30, 2020, the Commission’s Office of General Counsel (“OGC”) advised the Office of Hearing Examiners that there are no disputed issues that necessitate an evidentiary hearing at the Commission in this case. OGC further advised that Dominion and Staff agreed to stipulate the entry of all witness testimony without cross-examination or surrebuttal, and that DEQ does not wish to participate in a hearing in this matter.

On March 31, 2020, upon consideration of OGC’s representations and the ongoing public health emergency relating to the spread of novel coronavirus,⁵ I issued a Ruling that: (a) cancelled the April 22, 2020 hearing; (b) directed Dominion and Staff to file a stipulation providing for the admission of evidence relative to the Application, without the necessity of the April 22, 2020 hearing; and (c) extended the public comment period through April 29, 2020.

On April 8, 2020, Dominion and Staff filed a joint Proposed Stipulation recommending the documents and evidence that should be entered into the evidentiary record.

No public comments were filed in this proceeding.

SUMMARY OF THE RECORD

Public Witness Testimony

Robyn Witschey testified on behalf of the Clifton Betterment Society. She testified that the Project runs through a floodplain in an area used for fundraising and events scheduled years in advance. She requested a Project schedule, advance notice, and a Project point of contact. She testified further that some residents have goat and horse pens directly under the transmission lines, so they will need to plan to move the animals in advance.⁶ Regarding the Rebuild Project, she testified “[w]e think it’s a great thing ... we don’t want to be California....”⁷

³ Ex. 7.

⁴ Ex. 1.

⁵ See, e.g., Executive Order No. 55, *Temporary Stay at Home Order Due to Novel Coronavirus (COVID-19)* (Mar. 30, 2020).

⁶ Transcript (“Tr.”) at 7-8.

⁷ Tr. at 9.

Dominion's Direct Testimony

Dominion's Application, Appendix, and DEQ Supplement were sponsored by **Sarah Rana**, Engineer III – Electric Transmission Planning; **Robert J. Shevenock II**, Principal Engineer – Electric Transmission Line Engineering; **Mohammad M. Othman**, Engineer III – Substation Engineering; and **Lane E. Carr**, Siting and Permitting Specialist I, for the Company.

Ms. Rana sponsored or co-sponsored, among other things, parts of the Appendix describing the Company's justification for the five segments of the Rebuild Project.⁸ Dominion's target in-service date for the Project is December 31, 2024.⁹

Mr. Shevenock sponsored or co-sponsored, among other things, the Company's cost estimate for the Rebuild Project; pictures of existing structures to illustrate their deterioration; drawings depicting the proposed structures and the right-of-way with both the existing and proposed configurations; the line design and operational features; and analysis of electric and magnetic field levels ("EMF").¹⁰ Using historical average, peak, and projected loadings, the Company provided EMF calculations for the existing lines in the right-of-way and for such lines after construction of the Rebuild Project.¹¹ Based on the conclusions of scientific reviews of EMF associated with the Rebuild Project, the Company determined that no adverse health effects would result from the operation of the Rebuild Project.¹²

Mr. Othman sponsored the details of the substation work associated with the Rebuild Project and the Company's cost estimate for the substation work.¹³

Ms. Carr explained the Company's route selection and consideration of alternative routes. He also sponsored, among other things, the Company's environmental evaluation of the Rebuild Project, including the DEQ Supplement to the Application.¹⁴

Below is a summary of information sponsored by Dominion's direct witnesses, organized for each of the five Project segments. All five segments: (1) involve existing and proposed facilities located entirely on existing right-of-way or on Company-owned property,¹⁵ and (2) involve replacing structures that are predominantly COR-TEN® steel lattice towers constructed in 1966 or 1967 that, according to Dominion, have reached the end of their lives.¹⁶

⁸ Ms. Rana sponsored or co-sponsored the following parts of the Appendix: Sections I.A-E, G, H, J, K, M, and N; Sections II.A.3 and 10. Ex. 3 (Rana direct) at 2.

⁹ Ex. 2 (Appendix) at 32.

¹⁰ Mr. Shevenock sponsored or co-sponsored the following parts of the Appendix: Sections I.A, F, I, and L; Sections II.A.5, B.1-B.5; and Section IV. Ex. 4 (Shevenock direct) at 2.

¹¹ Ex. 2 (Appendix) at 303-07.

¹² *Id.* at 308-16.

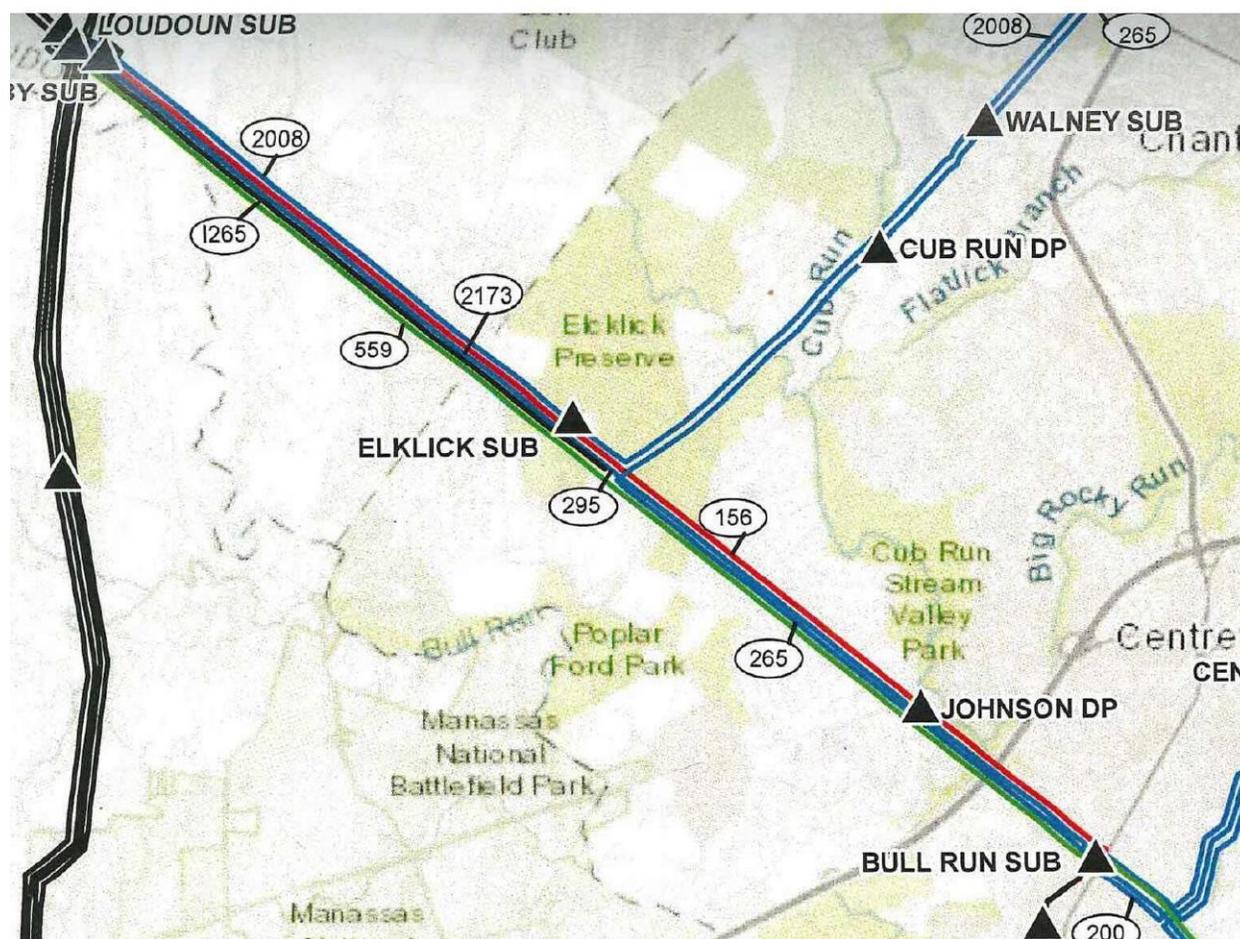
¹³ Mr. Othman sponsored or co-sponsored the following parts of the Appendix: Sections I.F and I and Section II.C. Ex. 5 (Othman direct) at 2.

¹⁴ Ms. Carr sponsored the DEQ Supplement. Additionally, she sponsored or co-sponsored the following parts of the Appendix: Section I.G; Sections II.A.1-A.4, A.6-A.9, A.11, A.12, B.5-6; Sections III and V. Ex. 6 (Carr direct) at 2.

¹⁵ Ex. 2 (Appendix) at 112.

¹⁶ *Id.* at 3.

1. LOUDOUN – BULL RUN SEGMENT¹⁷



Between Dominion's existing Loudoun and Bull Run Substations, Dominion proposes to:

- Remove and retire existing Line #156 (Loudoun – Bull Run). This includes 4.4 miles on double-circuit structures currently shared with Line #2008 (Loudoun – Dulles) and 4.0 miles between Dulles Junction and Bull Run Substation on single-circuit structures. As depicted by the red line above, Line #156 is the only existing 115 kV line remaining in this transmission corridor.
- Cut and loop existing Line #265 (Clifton – Sully) into Bull Run Substation as the line passes directly overhead. Upon completion of this new terminus, the portion of this line between Bull Run and Clifton Substations would be renumbered Line #2212.
- Perform related substation work at the Loudoun, Bull Run, Mosby, Sully and Clifton Substations. This includes the installation of additional 230 kV equipment at Bull Run Substation (to loop in Line #265) and the removal of 115 kV equipment at Loudoun and Bull Run Substations.¹⁸

¹⁷ Ex. 2 (Appendix) at 70.

¹⁸ *Id.* at 5, 65, 244; Ex. 11.

The estimated costs of the above transmission line and substation work proposed for this Project segment are \$8.11 million and \$8.5 million, respectively.¹⁹ The estimated cost for this Project segment, if Line #156 were not retired but instead constructed for 230 kV (and initially operated at 115 kV), is approximately \$2 million greater.²⁰

For this Project segment, no line structures are proposed for installation.²¹ Approximately 72 structures of various types, primarily concrete poles and double-circuit lattice towers, and the associated conductors and wires for Line #156 would be removed.²²

According to Dominion, the double-circuit structures between Loudoun Substation and Dulles Junction have reached their end-of-life. They are COR-TEN® towers that were constructed in 1967.²³

If Line #265 were not cut into Bull Run Substation, Dominion indicated Line #156 could not be retired and would instead be reconstructed with the line capable of operating at 230 kV. Under this alternative, the reconstructed line would be operated at 115 kV until 230 kV is needed to serve the load area.²⁴

Dominion concluded there is no need to rebuild Line #156 if Line #265 is cut into Bull Run Substation, as proposed. However, under this scenario, reliability would be compromised if Line #2008 were not rebuilt (as proposed in the next two Project segments). Line #2008 is part of the network feed to Dulles Substation. Removing part of Line #2008 would, among other things, cause over 241 MW of load to be on a radial feed.²⁵ Violations of mandatory NERC Reliability Standards were identified when Dominion performed a contingency analysis to model a scenario with Lines #2008 and #156 both out of service.²⁶

¹⁹ Ex. 2 (Appendix) at 72.

²⁰ Ex. 11.

²¹ Ex. 2 (Appendix) at 177-78. New structures would be needed to support Line #2008. As part of the Loudoun-Elklick segment and Elklick-Bull Run segments summarized below, Line #2008 would share new double-circuit structures with Lines #2173, #265, and #295. *Id.* at 65-66.

²² *Id.* at 65.

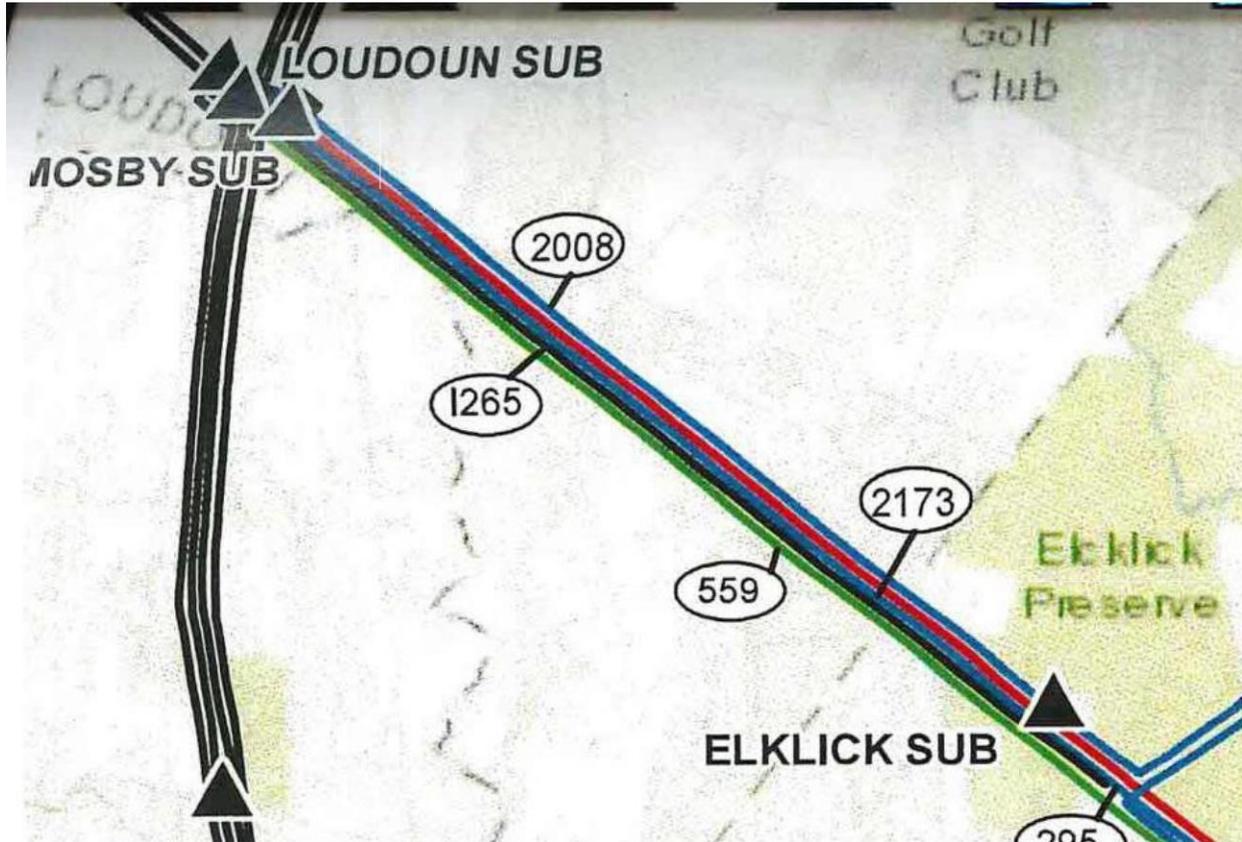
²³ *Id.* at 5-6, 78-85.

²⁴ *Id.* at 31.

²⁵ *Id.* at 5-6.

²⁶ *Id.* at 6, 34, 36-37.

2. LOUDOUN – ELKCLICK SEGMENT



Between Dominion's Loudoun Substation and Ellick Junction,²⁷ Dominion proposes to:

- Remove approximately 3.9 miles of existing Line #2173 (Loudoun – Ellick) on double-circuit structures.
- Remove idle Line #1265, which currently shares structures with Line #2173 between Loudoun Substation and Ellick Junction. This idle line is depicted by the black line above.
- Rebuild approximately 3.9 miles of Line #2008 and Line #2173 on new, shared double-circuit structures along the Line #2008 centerline.²⁸

Dominion's estimated cost of the above work is \$9.65 million.²⁹

²⁷ Ellick Junction is less than 500 feet from the Ellick Substation. *Id.* at 184.

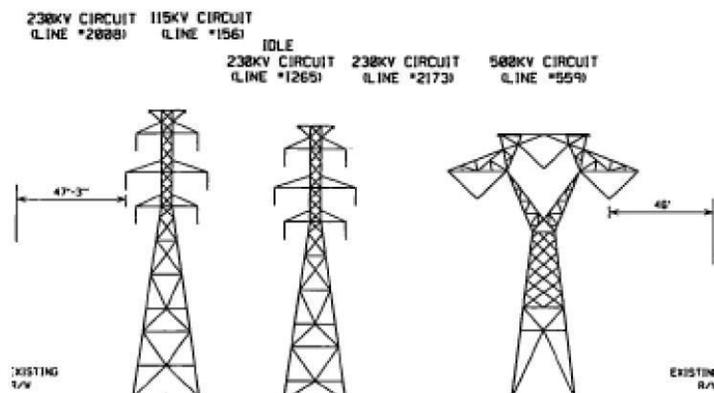
²⁸ *Id.* at 6-7, 65-66.

²⁹ *Id.* at 72.

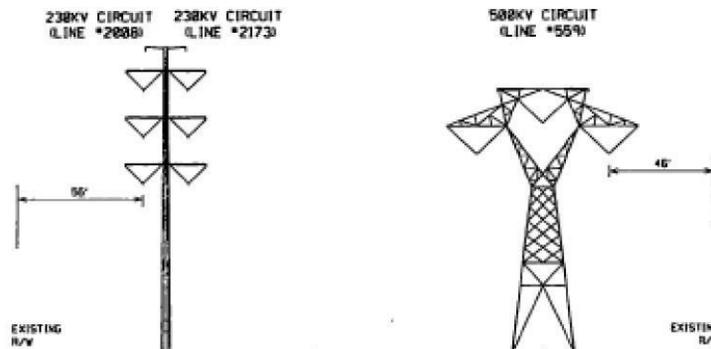
For this Project segment, 19 double-circuit weathering steel lattice towers would be removed and replaced with 19 double-circuit weathering steel poles. One single-circuit weathering steel three-pole structure would also be constructed to allow Line #2173 to cross under Line #2008 where the lines diverge at Ellick Junction. Double-circuit three-phase twin-bundled 795 aluminum conductor steel-reinforced (“ACSR”) conductors would be used for proposed Lines #2008 and #2173. Two OPGW shield wires would replace two 3#6 alumoweld shield wires.³⁰

The pictures below illustrate the impact of this segment’s work on the typical right-of-way in this part of the corridor, combined with the line removal proposed as part of the Loudoun-Bull Run segment discussed above. Two sets of double-circuit towers would be replaced by one set of double-circuit poles. (The existing 500 kV Line #559 is not at issue in this proceeding.)³¹

Current



Proposed



For the structures that would be replaced, the approximate existing structure heights range from 106 to 136 feet, with an average of 124 feet. The approximate proposed structure heights range from 50 to 150 feet, with an average of 131 feet.³²

³⁰ *Id.* at 65-66, 130-31, 160-62.

³¹ *Id.* at 124.

³² *Id.* at 177. The approximate structure heights identified for all Project segments do not include foundation reveal and are subject to change based on final engineering for the proposed structures.

According to Dominion, the double-circuit structures carrying Line #2173 and the idle line proposed for removal have reached their end-of-life.³³ More than 20 violations of mandatory NERC Reliability Standards were identified when Dominion performed a contingency analysis to model a scenario with Line #2173 out of service.³⁴

Dominion estimated that the acreage of wetlands in the right-of-way for this segment is 1.69 (low probability), 14.63 (medium probability), and 20.15 (high probability).³⁵ Dominion indicated that this portion of the Project would have minimal visual impact on two Civil War battlefields that are considered potentially eligible for listing in the VLR/NRHP.³⁶ The Battle of Gainesville is located southwest of the Elklick Substation. The First Battle of Manassas overlaps with the Battle of Gainesville area and extends farther east, surrounding the Elklick Substation.³⁷

The Elklick Preserve and Elklick Woodlands State Natural Area Preserves are adjacent to the existing transmission line corridor near the Elklick Substation. These areas have been preserved to protect a Northern Hardpan Basic Oak – Hickory Forest.³⁸ Also adjacent to the Elklick Substation is Halifax Pointe District Park.³⁹

³³ *Id.* at 6-7.

³⁴ *Id.* at 7-8, 20, 34, 38-49.

³⁵ Ex. 2 (Application) at DEQ Supplement at Attach. 2.D.1, p. 4.

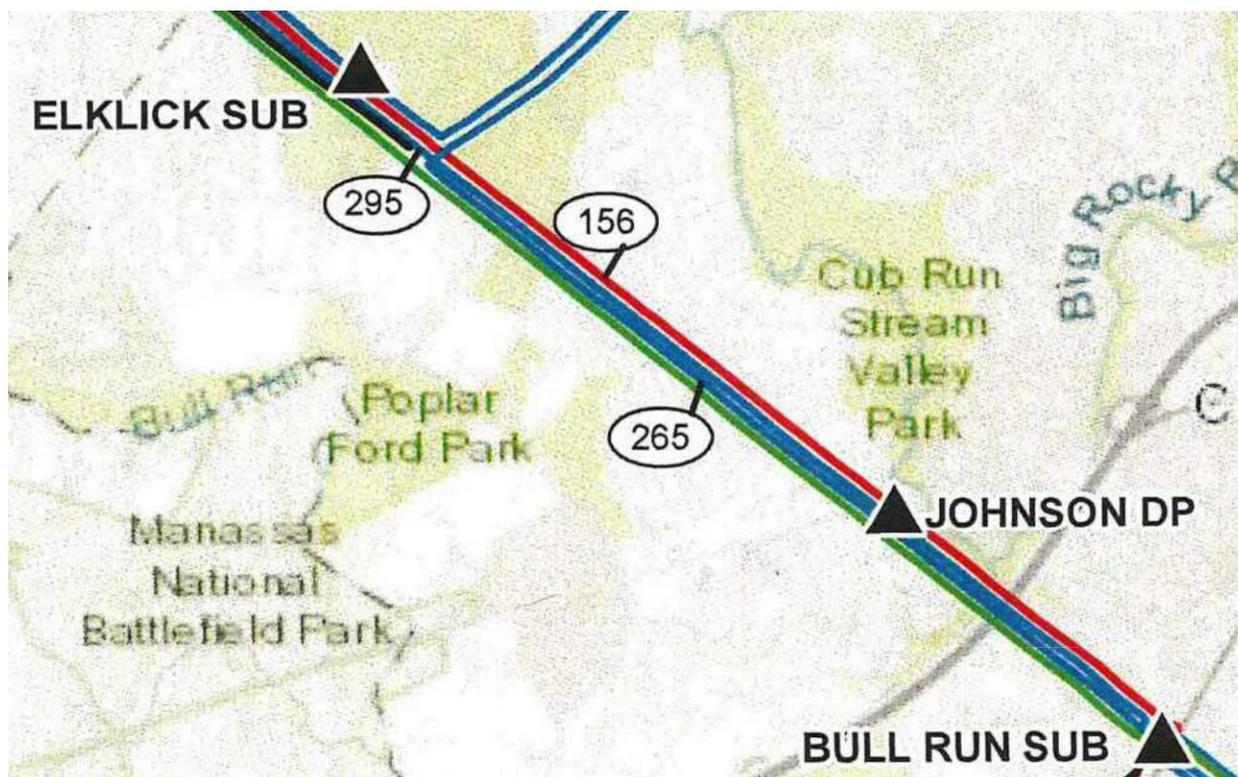
³⁶ *See* Ex. 2 (DEQ Supplement) at Attach. 2.H.1, pp. 46-47, 49-51.

³⁷ Ex. 2 (Appendix) at 115.

³⁸ *Id.* at 287, 289-90.

³⁹ *Id.* at 290.

3. ELKLICK – BULL RUN SEGMENT



Between Elklick Junction and Bull Run Substation, Dominion proposes to:

- Rebuild approximately 4.4 miles of existing Line #295 (Elklick – Bull Run) on new double-circuit structures.
- Remove idle Line #I265, which currently shares structures with Line #295 between Elklick Junction and Dulles Junction.⁴⁰
- Rebuild 0.4 mile of Line #2008 between Elklick Junction and Dulles Junction on structures shared with Line #295.
- Rebuild approximately 4.0 miles of existing 230 kV transmission Line #265 between Dulles Junction and Bull Run Substation on structures shared with Line #295.⁴¹

Dominion's estimated cost of the above transmission line work is \$13.14 million.⁴²

⁴⁰ Dulles Junction is where Lines #2008 and #265 enter/exit the Project's transmission corridor from/for the transmission corridor leading to Dulles Substation, other stations, and delivery points. Ex. 2 (Appendix) at 13, 70.

⁴¹ *Id.* at 8.

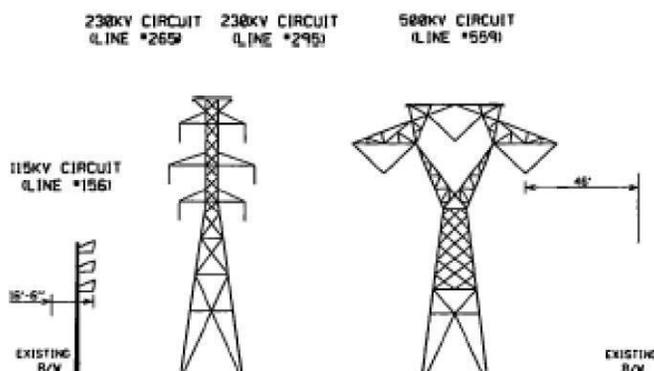
⁴² *Id.* at 72.

For this Project segment, approximately 28 structures would be removed and replaced by approximately 30 structures. Two more structures are added than removed due to the Company's proposal to replace one lattice tower with three one-pole structures at the Dulles Junction confluence of Lines #2008, #295, and #265. The existing structures are primarily double-circuit weathering steel lattice towers while the proposed structures are primarily double-circuit weathering steel two-pole structures.⁴³

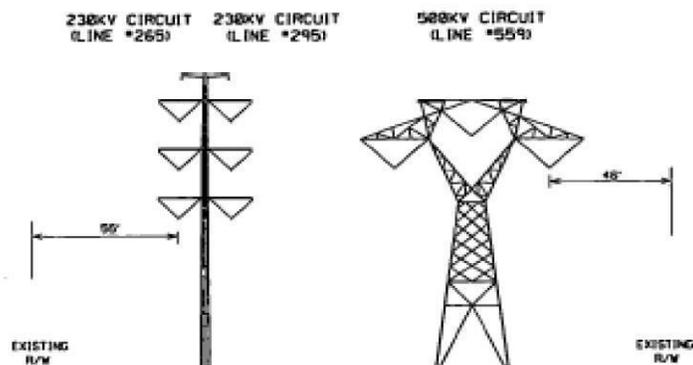
Three-phase twin-bundled 795 ACSR conductors would be installed for proposed Lines #295 and #265, replacing the existing three-phase 1033.5 ACSR conductors. Two OPGW shield wires would replace (a) two 3#6 alumoweld shield wires; or (b) one OPGW and one 3#6 alumoweld shield wire.⁴⁴

For parts of this Project segment where Line #156 is supported by single-circuit poles, the pictures below illustrate the impact of the proposed construction on typical rights-of-way, including the line removal proposed as part of the Loudoun-Bull Run segment.⁴⁵

Current



Proposed



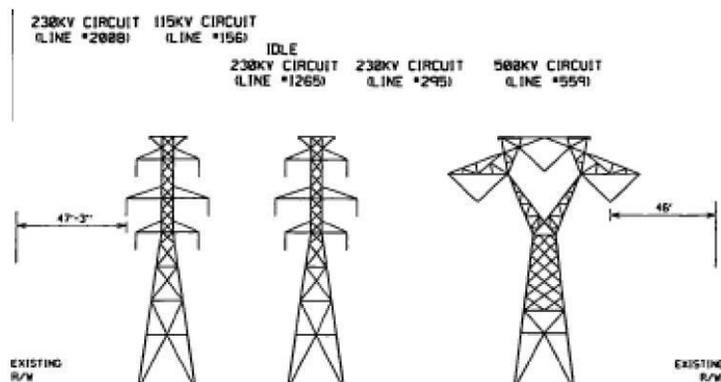
⁴³ *Id.* at 66, 125-26, 132-33, 163-69, 184-87.

⁴⁴ *Id.* at 66.

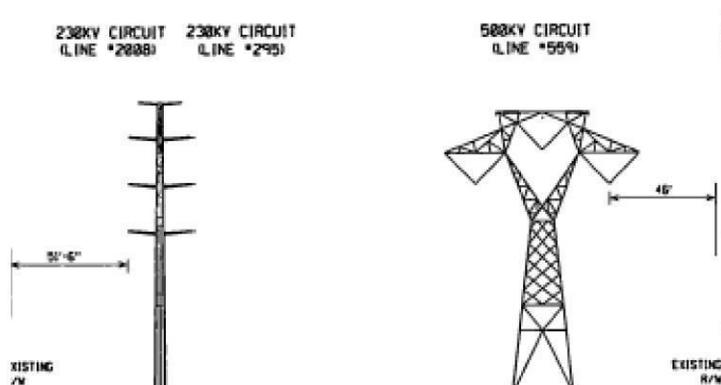
⁴⁵ *Id.* at 126.

For parts of this Project segment where Line #156 is supported by double-circuit structures, and idle Line #I265 is supported on a separate set of double-circuit structures, the pictures below illustrate the impact of the proposed construction on the typical right-of-way.⁴⁶

Current



Proposed



For the existing structures that would be replaced, their approximate heights range from 35 to 140 feet, with an average of 113 feet. The approximate proposed structure heights range from 50 to 147 feet, with an average of 120 feet.⁴⁷

According to Dominion, the double-circuit structures carrying Lines #265, #295, and #2008 proposed for removal have reached their end-of-life.⁴⁸ Line #295 is part of the network feed to the Ellick Substation. Line #265 is part of the network feed to Sully Substation, and also has tapped load at the Johnson Delivery Point and Walney Substation. More than 20 violations of mandatory NERC Reliability Standards were identified when Dominion performed a contingency analysis to model a scenario with Lines #295 and #265 both out of service.⁴⁹

⁴⁶ *Id.* at 125.

⁴⁷ *Id.* at 178.

⁴⁸ *Id.* at 8-9, 85.

⁴⁹ *Id.* at 8-9, 22, 34, 50-56.

Dominion estimated the acreage of wetlands in the right-of-way for this segment is 3.70 (low probability), 5.26 (medium probability), and 5.81 (high probability).⁵⁰ This segment of the Project (and of the existing transmission line corridor) runs through overlapping Civil War battlefield areas.⁵¹ Dominion indicated that this segment of the Project would have a minimal visual impact on one historic district (Manassas Battlefield Historic District/Manassas Battlefield Park) that is federally listed, three battlefields areas⁵² that are considered potentially eligible for listing, and one cultural resource (Lane's Mill Archeological Park) that is potentially eligible for listing.⁵³

The area for this Project segment also includes the Cub Run Stream Valley Park. Cub Run Stream Valley Park contains the same type of Northern Hardpan Basic Oak – Hickory Forest protected in the Ellick Preserve Area, but with a lower biodiversity ranking.⁵⁴ This Project segment, combined with the removal of Line #156 proposed in the overlapping Loudoun – Bull Run segment, would decrease the number of transmission line structures in and near the Cub Run Stream Valley Park.⁵⁵

⁵⁰ Ex. 2 (DEQ Supplement) at Attach. 2.D.1, p. 4.

⁵¹ Ex. 2 (Appendix) at 118.

⁵² These are: (1) Battle of Gainesville, Brawner's Farm, Groveton, Manassas Plains, Second Battle of Bull Run, Second Battle of Manassas; (2) Brawner's Farm, First Battle of Bull Run, First Battle of Manassas; and (3) Bristoe Station Battlefield, Bull Run Bridge, Kettle Run Battlefield, Manassas Station Operations Battlefield, Union Mills. See Ex. 2 (DEQ Supplement) at Attach. 2.H.1, p. 24.

⁵³ *Id.* at Attach. 2.H.1, pp. 30-31, 38, 40, 46-47, 49-51, 53-55, 127-39.

⁵⁴ *Id.* at Attach. 2.F.2, p. 2.

⁵⁵ Ex. 2 (Appendix) at 186.

4. BULL RUN – CLIFTON SEGMENT



Between the existing Bull Run and Clifton Substations, Dominion proposes to:

- Rebuild approximately 3.2 miles of existing 230 kV transmission Line #265 on new double circuit structures between Bull Run Substation and an existing structure located three spans west of Clifton Substation.
- Rebuild approximately 0.6 mile of existing 230 kV transmission Line #200 (Bull Run – Pender) on structures shared with Line #265 between Bull Run Substation and Pender Junction.⁵⁶
- Rebuild approximately 2.3 miles of existing 230 kV transmission Line #2051 (Clifton – Pender) on structures shared with Line #265 between Pender Junction and a structure located three spans west of Clifton Substation.⁵⁷

The estimated cost of the above transmission line work is \$9.72 million.⁵⁸

⁵⁶ Pender Junction is where Lines #200, #244, and #2051 enter/exit the transmission corridor from/for the transmission corridor leading to Pender and Centreville Substations. At the top and center of the map above, this is where multiple blue lines intersect the transmission line corridor for the Project. Ex. 2 (Appendix) at 13, 70.

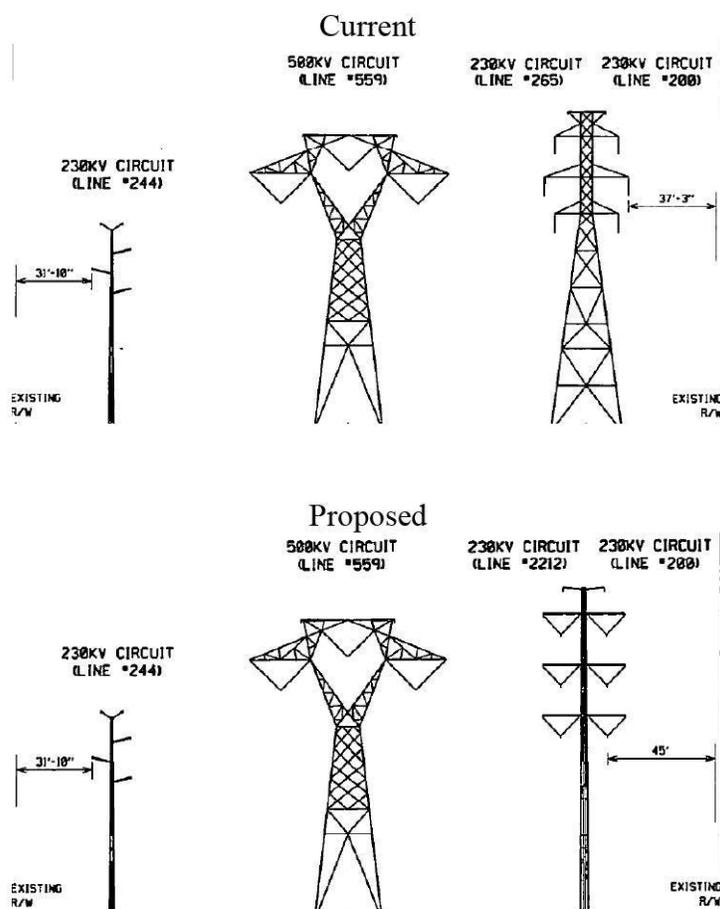
⁵⁷ *Id.* at 9-10.

⁵⁸ *Id.* at 72.

For this Project segment, approximately 17 double-circuit weathering steel lattice towers would be replaced with 17 double-circuit weathering steel poles.⁵⁹

Three-phase twin-bundled 795 ACSR conductors would be installed for proposed Lines #200, #265 (future #2212),⁶⁰ and #2051, replacing the existing three-phase 1033.5 ACSR conductors. For three spans of Line #265 west of the Clifton Substation, only the conductor but not the structures would be replaced. For these three spans, three-phase 1233.6 ACSS/TW (HS-285) conductors would replace three-phase 1033.5 ACSR conductors. Two OPGW shield wires would replace two OPGW shield wires.⁶¹

For parts of this Project segment where Line #244 (which, like Line #559, is not part of the Project) is in the transmission corridor, the pictures below illustrate the impact of the proposed construction on typical rights-of-way.⁶²



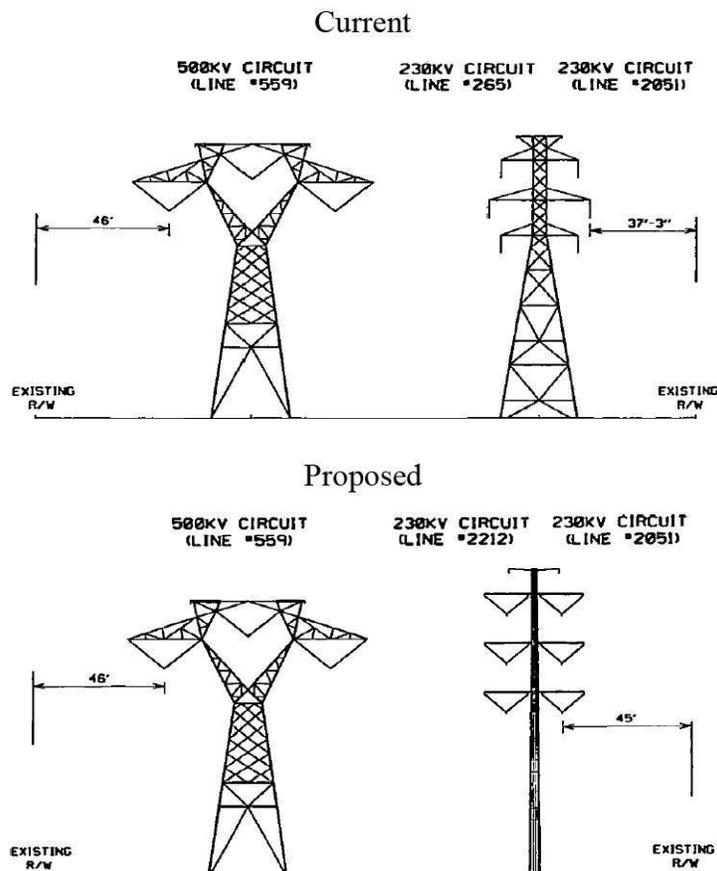
⁵⁹ *Id.* at 66-67, 170-73, 179.

⁶⁰ As discussed in the Loudoun – Bull Run segment of the Project, if Line #265 is cut into the Bull Run Substation, the existing Line #265 from Bull Run to Clifton would be renumbered Line #2212.

⁶¹ *Id.* at 66-67, 189-90.

⁶² *Id.* at 127.

For parts of this Project segment without Line #244, the pictures below illustrate the impact of the proposed construction on typical rights-of-way.⁶³



The heights of the existing structures that would be replaced range from approximately 101 to 151 feet, with an average of 122 feet. The approximate proposed structure heights range from approximately 110 to 152 feet, with an average of 130 feet.⁶⁴

According to Dominion, the double-circuit structures carrying Lines # 265, #200, and #2051 proposed for removal have reached their end-of-life.⁶⁵ More than 20 violations of mandatory NERC Reliability Standards were identified when Dominion performed a contingency analysis to model a scenario with these three lines out of service. These lines are part of network loops that provide transmission service to substations and delivery points.⁶⁶

Dominion estimated the acreage of wetlands in the right-of-way for this segment is 3.39 (low probability), 5.29 (medium probability), and 1.03 (high probability).⁶⁷

⁶³ *Id.* at 128.

⁶⁴ *Id.* at 179.

⁶⁵ *Id.* at 10, 86-94.

⁶⁶ *Id.* at 10-11, 25, 34-35, 57-60.

⁶⁷ Ex. 2 (DEQ Supplement) at Attach. 2.D.1, p. 4.

Dominion indicated that this segment of the Project would have a minimal visual impact on one historic district eligible for federal listing (Union Mills), two Civil War battlefields that are considered potentially eligible for listing,⁶⁸ and another battlefield (Blackburn's Ford Battlefield) that is eligible for listing.⁶⁹ The Bull Run Substation is located within all three battlefields that are considered potentially eligible or eligible, so consequently all transmission lines coming into the substation (existing or rebuilt) must cross these areas.⁷⁰ The existing transmission line corridor also passes through part of the Union Mills Historic District.

Also in this area are conservation easements held by Fairfax County for the Confederate Fortifications Site and the Johnny Moore Stream Valley Park. From north to south, the transmission line corridor crosses part of the Confederate Fortifications Site ("Fortifications Site"); then crosses through or adjacent to the Westfields Golf Club, which is also within the Union Mills Historic District;⁷¹ then crosses a part of the Johnny Moore Stream Valley Park.⁷² Within the Fortifications Site, the Project would replace two structures in an area that is heavily wooded except for the transmission line corridor and development surrounding the Fortifications Site.⁷³ Within the Johnny Moore Stream Valley Park, the Project would replace one structure located in the park near the Johnny Moore Stream⁷⁴ and a second structure located near the border of the park and residential development.⁷⁵

⁶⁸ These are: (1) Battle of Gainesville, Brawner's Farm, Groveton, Manassas Plains, Second Battle of Bull Run, Second Battle of Manassas; and (2) Brawner's Farm, First Battle of Bull Run, First Battle of Manassas.

⁶⁹ *Id.* at Attach. 2.H.1, pp. 43-44, 46, 48-49, 52-53, 55-56, 136-37, 142-43.

⁷⁰ Ex. 2 (Appendix) at 119.

⁷¹ *Id.*; Ex. 2 (DEQ Supplement) at Attach. 2.H.1, p. 43.

⁷² Ex. 2 (Appendix) at 290-91.

⁷³ *Id.* at 188.

⁷⁴ *Id.* at 189 (structure 265/8).

⁷⁵ *Id.* (structure 265/6).

5. CLIFTON – OX SEGMENT



Between Dominion's existing Clifton and Ox Substations, the Company proposes to:

- Rebuild a combined total of approximately 6.4 miles of existing 230 kV Line #2063 (Clifton – Ox) on new double circuit structures. This includes approximately: (a) 1.0 mile of Line #2063 between a structure located three spans east of the Clifton Substation and a structure located one span west of the Moore Delivery Point (“DP”); and (b) approximately 5.4 miles of Line #2063 between a structure located one span east of the Moore DP and a structure located three spans west of the Ox Substation.
- Rebuild a total of approximately 6.4 miles of existing 230 kV Line #266 (Clifton – Glen Carlyn) on structures shared with Line #2063 along the Clifton Substation-Moore DP and the Moore DP-Ox Substation sections described above.⁷⁶

The estimated cost of the above transmission line work is \$18.35 million.⁷⁷

⁷⁶ The record also references Line #266 as Line #2164. As part of construction approved in Case No. PUR-2017-00002, Dominion proposed splitting and renaming Line #266 (Clifton – Glen Carlyn) into Line #2164 (Clifton – Idylwood) and Line #266 (Idylwood – Glen Carlyn). Ex. 2 (Application) at 4, n.2.

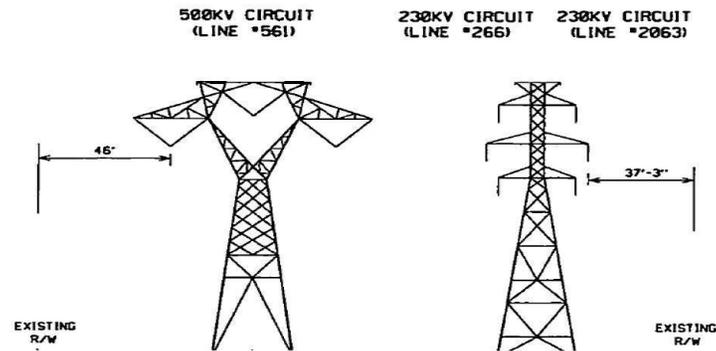
⁷⁷ Ex. 2 (Appendix) at 72.

For this Project segment, approximately 39 structures, which are primarily double-circuit weathering steel lattice towers, would be replaced with 36 double-circuit weathering steel poles.⁷⁸

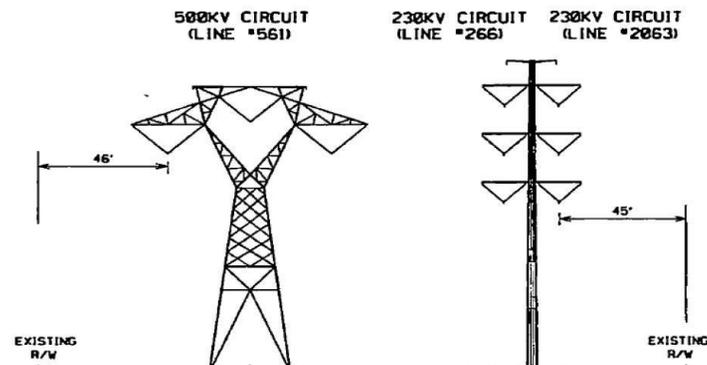
Three-phase twin-bundled 795 ACSR conductors would be installed for proposed Lines #2063 and #266, replacing the existing three-phase 1033.5 and 1272 ACSR conductors. Two OPGW shield wires would replace two OPGW shield wires.⁷⁹

For this Project segment, the pictures below illustrate the impact of the proposed construction on typical rights-of-way.⁸⁰

Current



Proposed



The approximate existing structure heights range from 101 to 158 feet, with an average of 119 feet. The approximate proposed structure heights range from 110 to 162 feet, with an average of 130 feet.⁸¹

⁷⁸ *Id.* at 67-68, 174-80, 190-95.

⁷⁹ *Id.* at 67-68.

⁸⁰ *Id.* at 129.

⁸¹ *Id.* at 179-80.

According to Dominion, the double-circuit structures carrying Lines # 2063 and #266 proposed for removal have reached their end-of-life.⁸² One violation of mandatory NERC Reliability Standards was identified when Dominion performed a contingency analysis to model a scenario with Line #2063 and partial Line #266 both out of service. These lines are part of network loops that provide transmission service to substations and delivery points. Line #2063 is the only source for load tapped at Moore DP.⁸³

Dominion estimated the acreage of wetlands in the right-of-way for this segment is 5.13 (low probability), 14.63 (medium probability), and 2.82 (high probability).⁸⁴ Dominion indicated this portion of the Project would have minimal visual impact on one battlefield area⁸⁵ that is potentially eligible for listing.⁸⁶ The Clifton Historic District is federally listed, and located 0.1 mile from the existing Clifton-Ox centerline.⁸⁷ Dominion concluded there would be no visual impact from the Project.⁸⁸

DEQ Report

In the DEQ Report, DEQ advised that the Rebuild Project would likely require the following permits and approvals:⁸⁹

1. Water Permits:

a. Section 404 permit (*e.g.*, Nationwide Permit 12, if appropriate). Required pursuant to the federal Clean Water Act and issued by the U.S. Army Corps of Engineers (“Corps”) for impacts to jurisdictional wetlands and/or waters of the United States.

b. Virginia Water Protection Permit (9 VAC 25-210 *et seq.*) issued by DEQ for impacts to waters and jurisdictional wetlands, including isolated wetlands.

2. Subaqueous Lands Management:

Subaqueous Lands Permit pursuant to Code of Virginia (“Code”) § 28.2-1204. Issued by the Virginia Marine Resources Commission for encroachments in, on, or over state-owned subaqueous beds.

3. Erosion and Sediment Control, and Stormwater Management Plans:

General erosion and sediment control specifications pursuant to Code § 62.1-44.15:55.

⁸² *Id.* at 11-12, 95-109.

⁸³ *Id.* at 11-12, 28, 34-35, 61-62.

⁸⁴ Ex. 2 (DEQ Supplement) at Attach. 2.D.1, p. 4.

⁸⁵ This is Bristoe Station Battlefield, Bull Run Bridge, Kettle Run Battlefield, Manassas Station Operations Battlefield, Union Mills.

⁸⁶ *See* Ex. 2 (DEQ Supplement) at Attach. 2.H.1, pp. 26, 58-59, 145-46.

⁸⁷ Ex. 2 (Appendix) at 285.

⁸⁸ Ex. 2 (DEQ Supplement) at Attach. 2.H.1, p. 40-43, 144.

⁸⁹ Ex. 7 at 4-6.

General erosion and sediment control specifications are subject to annual approval by DEQ.

4. Stormwater Management Program Permit:

Virginia Stormwater Management Program General Permit for Discharges of Stormwater from Construction Activities (9 VAC 25-880-70 *et seq.*) involving land disturbance of 1 acre or more. Coverage under this general permit is approved by DEQ.

5. Chesapeake Bay Preservation Act:

The conditions set out in 9 VAC 25-830-150 B apply to the exemption of transmission lines.

6. Air Quality Permits or Approvals:

a. Open Burning Permit (9 VAC 5-130 *et seq.*). For open burning involving demolition debris.

b. Fugitive dust emissions (9 VAC 5-50-60 *et seq.*). Governs abatement of visible emissions.

c. Fuel-burning equipment (9 VAC 5-80, Article 6, Permits for New and Modified Sources). Governs the installation of fuel-burning equipment (boilers, generators, compressors, etc.) or any other air pollution emitting equipment.

7. Solid and Hazardous Waste Management:

a. Applicable state laws and regulations include:

- Virginia Waste Management Act (Code § 10.1-1400 *et seq.*);
- Virginia Hazardous Waste Management Regulations (9 VAC 20-60);
- Virginia Solid Waste Management Regulations (9 VAC 20-81); and
- Virginia Regulations for the Transportation of Hazardous Materials (9 VAC 20-110).

b. Applicable federal laws and regulations include:

- Resource Conservation and Recovery Act, 42 U.S.C. § 6901 *et seq.*, and the applicable regulations contained in Title 40 of the Code of Federal Regulations; and
- U.S. Department of Transportation Rules for Transportation of Hazardous Materials (49 C.F.R. Part 107).

8. Protected Species Legislation:

The Federal Endangered Species Act and Virginia protected species legislation may apply if there is any taking of protected species. The applicant must comply with the Federal Endangered Species Act (16 U.S.C. § 1531 *et seq.*), Virginia protected species legislation (Code § 29.1-563 *et seq.*), and the Virginia Endangered Plant and Insect

Species Act of 1979, as amended (Chapter 39 of Code §§ 3.1-1020 through 1030).

9. Open-Space Land Act:

Code § 10.1-1704 requires that land designated as open space shall not be converted or diverted from open-space land use unless the public body that designated the land as open-space finds that the conversion or diversion meets several criteria.

10. Historic and Archaeological Resources:

Section 106 of the National Historic Preservation Act of 1966 (“NHPA”), as amended, and its implementing regulation 36 C.F.R. 800 requires that federally licensed and permitted projects consider its effects on properties that are listed or eligible for listing on the National Register of Historic Places. Section 106 applies if there is federal involvement such as the issuance of a § 404 Clean Water Act permit, including Nationwide Permits. The applicability of § 106 to the entire project or any portion thereof must be determined by the responsible federal agency.

11. Floodplain Management:

Pursuant to Code § 10.1-603 and in accordance with 44 C.F.R. § 60.12 of the National Flood Insurance Program Regulations for Floodplain Management and Flood Hazard Identification, all construction or land-disturbing activities in floodplains shall be submitted to the locality and comply with the locally adopted floodplain management ordinance.

12. Virginia Department of Transportation (“VDOT”) Right-of-Way Permit:

The General Rules and Regulations of the Commonwealth Transportation Board (24 VAC 30-151) are adopted pursuant to the authority of Code § 33.1-12. These rules and regulations provide that no work of any nature shall be performed on any real property under the ownership, control or jurisdiction of VDOT until written permission has been obtained from VDOT.

The DEQ Report also contained recommendations based on information and analysis submitted by reviewing agencies. DEQ’s recommendations, which are in addition to requirements of federal, state or local law or regulations listed above, are summarized below.

- Conduct an on-site delineation of all wetlands and stream crossings within the project area with verification by the Corps, using accepted methods and procedures, and follow DEQ’s recommendations to avoid and minimize impacts to wetlands and streams.⁹⁰

⁹⁰ *Id.* at 7, 10-12. A wetland impact consultation provided by DEQ’s Office of Wetlands and Stream Protection is also attached to the DEQ Report.

- Follow DEQ’s recommendations regarding air quality protection, as applicable.⁹¹
- Reduce solid waste at the source, reuse it and recycle it to the maximum extent practicable and follow DEQ’s recommendations regarding the evaluation of waste sites.⁹²
- Coordinate with the Department of Conservation and Recreation’s (“DCR”) Division of Natural Heritage regarding its recommendations to protect natural heritage resources, the Rusty patched bumble bee, karst resources, and the aquatic ecosystem; develop and implement an invasive species management plan; plant native species; and obtain an update on natural heritage information.⁹³
- Coordinate with the Department of Game and Inland Fisheries (“DGIF”) regarding its recommendations to protect wildlife resources.⁹⁴
- Coordinate with the Virginia Outdoors regarding its recommendation for additional consultation as necessary.⁹⁵
- Coordinate with the Department of Historic Resources regarding its recommendations to protect historic and archeological resources.⁹⁶
- Coordinate with the Department of Health regarding its recommendations to protect water supplies.⁹⁷
- Follow the principles and practices of pollution prevention to the maximum extent practicable.⁹⁸
- Limit the use of pesticides and herbicides, to the extent practicable.⁹⁹
- Coordinate with Fairfax and Loudoun Counties regarding their recommendations for additional coordination and protection of resources.¹⁰⁰

The Loudoun County recommendations referenced by the DEQ Report included:

- Perform any clearing within 300 feet of Bull Run Creek by hand, to the extent practicable.

⁹¹ *Id.* at 7, 17.

⁹² *Id.* at 7, 18.

⁹³ *Id.* at 7, 22-23.

⁹⁴ *Id.* at 7, 23-24.

⁹⁵ *Id.* at 7, 25.

⁹⁶ *Id.* at 7, 26.

⁹⁷ *Id.* at 7, 29.

⁹⁸ *Id.* at 7, 29-30.

⁹⁹ *Id.* at 7, 30.

¹⁰⁰ *Id.* at 8, 31-34.

- Avoid disturbance of steep slopes (grades of more than 25%). Minimize disturbance of, and specify the performance measures to be taken for, moderately steep slopes (grades from 15% to 25%).
- Use more stringent erosion and sediment controls than what is required to help mitigate any potential impacts to natural heritage resources.
- Manage the right-of-way, in coordination with Loudoun County and the Commonwealth, as a habitat with actions to promote the growth of indigenous vegetation.¹⁰¹

The Fairfax County recommendations referenced by the DEQ Report included:

- Involve the Fairfax County Park Authority Archaeology and Collection Branch (“FCPA”) in the development and review of the environmental impact statement (“EIS”) and any work resulting from Section 106 of the NHPA.
- Include two additional resources located within the one-mile buffer in the environmental impact review analysis.¹⁰²

Staff’s Testimony

Staff presented its findings and recommendations through the testimony of **Michael A. Cizenski**, Senior Utilities Engineer in the Commission’s Division of Public Utility Regulation. Mr. Cizenski evaluated, among other things, the need asserted for each segment of the Rebuild Project, an alternative project considered by the Company, and the route for the Rebuild Project.

Mr. Cizenski identified the local planning criteria developed by the Company for its transmission system, and attached to his testimony relevant excerpts from the Company’s end-of-life criteria.¹⁰³ Mr. Cizenski found the Application documented serious deterioration of the subject lines’ COR-TEN® structures, including visible deformation of structural members and “pack-out” at the structures’ bolted joints.¹⁰⁴ Staff also verified the results of the power flow studies relevant to each Project segment and confirmed overloads occur under various contingencies.¹⁰⁵

Mr. Cizenski identified the amount of existing demand-side management resources (“DSM”) deployed by Dominion, the amounts of DSM required to impact the need for each Project segment, and the amount of projected DSM incorporated in Dominion’s planning studies.¹⁰⁶

¹⁰¹ *Id.* at Attached Loudoun County Department of Planning and Zoning Letter, pp. 2-4.

¹⁰² *Id.* at Attached Fairfax County Department of Planning and Development Letter, p. 2.

¹⁰³ Ex. 8 (Cizenski) at 10-11, Attach. MAC-4.

¹⁰⁴ *Id.* at 9-10. “Pack out” occurs when thickening rust within a bolted joint pushes structural members apart, which can cause deformed joints, sectional loss of steel, and premature failure of transmission structures. *Id.* at 10.

¹⁰⁵ *Id.* at 11-14.

¹⁰⁶ *Id.* at 18, Attach. MAC-5.

Mr. Cizenski also addressed the alternative project that the Company indicated PJM rejected in favor of the Loudoun – Bull Run segment of the Rebuild Project.¹⁰⁷ This alternative project would have rebuilt Lines # 2008 and #156 between the Loudoun Substation and Dulles Junction with double-circuit steel structures, at an estimated cost of \$16 million.¹⁰⁸ While Line #156 would be built to 230 kV specifications, it would operate at 115 kV until 230 kV is needed.¹⁰⁹ Mr. Cizenski agreed with the Company's conclusion that the alternative project is not as robust as the proposed Loudoun – Bull Run segment of the Rebuild Project.¹¹⁰

Based on Staff's investigation, Mr. Cizenski concluded that Dominion reasonably demonstrated the need for the proposed Project and that the Project is necessary to continue providing reliable electric transmission service.¹¹¹

Dominion's Rebuttal Testimony

Dominion offered its rebuttal through the testimony of **Lane E. Carr**, Siting and Permitting Specialist for the Company.

Ms. Carr requested that the Commission reject four DEQ recommendations. First, she requested rejection of DCR's recommendation to avoid impacts to the Stiff goldenrod, Earleaf False foxglove, and Purple milkweed plants. She testified that these plants have neither state nor federal legal status requiring Dominion to avoid impacts to them. She testified further that Dominion does not believe any Project structures would be constructed within the designated areas identified by DCR, and thus any potential impacts would be limited to the temporary placement of timber mats for access. However, Dominion agreed to educate its construction team about these resources before construction and to coordinate with DCR if such resources are found within the Project area.¹¹²

Second, Ms. Carr requested rejection of DCR's recommendation that Dominion develop and implement an invasive species management plan, with an invasive species inventory for the Project area, to be included as right-of-way maintenance practices. She requested rejection of this recommendation because Dominion already has a comprehensive integrated vegetation management plan for controlling vegetation, including invasive species, that is consistent with the standards for utility right-of-way developed by the American National Standards Institute and the North American Electric Reliability Corporation for all regions in Dominion's service territory.¹¹³

Third, Ms. Carr requested rejection of DGIF's recommendation that Dominion conduct significant tree removal and ground clearing activities outside of the primary songbird nesting season, which is March 15 through August 15. Dominion does not believe that the Project will

¹⁰⁷ *Id.* at 15-16.

¹⁰⁸ *Id.* at 16.

¹⁰⁹ *Id.*

¹¹⁰ *Id.*

¹¹¹ *Id.* at 21.

¹¹² Ex. 10 (Carr rebuttal) at 2-4.

¹¹³ *Id.* at 4-5.

involve any significant ground-clearing activities; however, for any significant clearing during this nesting season Dominion will survey the Project area for songbird nesting colonies and will coordinate with DGIF to create appropriate construction restrictions for any colonies found.¹¹⁴

Fourth, Ms. Carr requested rejection of Fairfax County's recommendation that Dominion coordinate with the FCPA in the development and review of any EIS and any work resulting from NHPA Section 106. She testified that Dominion does not anticipate that an EIS or an environmental assessment will be required for the Project. However, the Company has coordinated, and intends to continue to coordinate, with the FCPA with respect to historical properties and NHPA compliance during the federal wetland permitting process.¹¹⁵

Ms. Carr offered clarifications for three aspects of the DEQ Report. First, she explained post-report communications between Dominion and DHR about antenna equipment on Project structures. She explained how antenna heights were included in the visibility analysis and simulations prepared for the Project. Letters exchanged by DHR and Stantec, a consultant on the Project, were attached to Ms. Carr's rebuttal testimony. Among other things, Stantec identified for DHR (and corrected) an error as to which structures would and would not have antenna equipment. Based on the additional information provided to DHR, DHR concurred with Dominion's assessment of a minimal impact on Bristoe Station Battlefield and no visual impact on the Battery Hill Redoubt.¹¹⁶

Ms. Carr also clarified that Dominion has already addressed, or will address with the submission of a Stage II Cultural Resources Survey for the Project, Fairfax County's recommendation that Quailwood and Stoneleigh be included in the historic analysis for the Project.¹¹⁷

Finally, Ms. Carr clarified that Dominion will coordinate with Loudoun County and the Commonwealth regarding vegetation and habitat management within the right-of-way, and otherwise perform work consistent with Dominion's integrated vegetation management plan.¹¹⁸

DISCUSSION

Code

Dominion filed its Application pursuant to the Utility Facilities Act¹¹⁹ and Code § 56-46.1. Code § 56-265.2 A 1 of the Utility Facilities Act provides that "it shall be unlawful for any public utility to construct . . . facilities for use in public utility service, except ordinary extensions or improvements in the usual course of business, without first having obtained a certificate from the Commission that the public convenience and necessity require the exercise of

¹¹⁴ *Id.* at 5-6.

¹¹⁵ *Id.* at 6-7.

¹¹⁶ *Id.* at 7-9, Attached Schs. 1-2.

¹¹⁷ *Id.* at 9.

¹¹⁸ *Id.* at 10.

¹¹⁹ Code § 56-265.1 *et seq.*

such right or privilege.” For the construction of any overhead transmission line of 138 kV or more that requires a CPCN, the Code also requires compliance with Code § 56-46.1.¹²⁰

Code § 56-46.1 A states in part as follows:

Whenever the Commission is required to approve the construction of any electrical utility facility, it shall give consideration to the effect of that facility on the environment and establish such conditions as may be desirable or necessary to minimize adverse environmental impact In every proceeding under this subsection, the Commission shall receive and give consideration to all reports that relate to the proposed facility by state agencies concerned with environmental protection; and if requested by any county or municipality in which the facility is proposed to be built, to local comprehensive plans that have been adopted pursuant to Article 3 (§ 15.2-2223 *et seq.*) of Chapter 22 of Title 15.2. Additionally, the Commission (a) shall consider the effect of the proposed facility on economic development within the Commonwealth . . . and (b) shall consider any improvements in service reliability that may result from the construction of such facility.

Code § 56-46.1 B further provides, in part, that:

As a condition to approval the Commission shall determine that the line is needed and that the corridor or route the line is to follow will reasonably minimize adverse impact on the scenic assets, historic districts and environment of the area concerned. . . . In making the determinations about need, corridor or route, and method of installation, the Commission shall verify the applicant’s load flow modeling, contingency analyses, and reliability needs presented to justify the new line and its proposed method of installation.¹²¹

In addition, the Code requires consideration of existing right-of-way when siting transmission lines. Code § 56-46.1 C provides that “[i]n any hearing the public service company shall provide adequate evidence that existing rights-of-way cannot adequately serve the needs of the company.” In addition, Code § 56-259 C provides that “[p]rior to acquiring any easement of right-of-way, public service corporations will consider the feasibility of locating such facilities on, over, or under existing easements of rights-of-way.”

¹²⁰ Code §§ 56-265.2 A 1 and 56-46.1 J.

¹²¹ Code § 56-46.1 provides that unless the context requires a different meaning, the term “environment” or “environmental,” which, as shown above, are used in Code §§ 56-46.1 A and B, “shall be deemed to include in meaning ‘historic,’ as well as a consideration of the probable effects of the line on the health and safety of the persons in the area concerned.” Code § 56-46.1 D.

Need

The Company identified system reliability needs supporting its proposed Rebuild Project, which the Company and PJM evaluated under the Company’s end-of-life transmission planning criteria. These planning criteria direct the Company to “either replac[e] ... facilities with in-kind infrastructure that meets current Dominion ... standards or employ[] an alternative solution to ensure the Dominion ... transmission system satisfies all applicable reliability criteria” if (1) a “[f]acility is nearing, or has already passed, its end of life;” and (2) “[c]ontinued operation risks negatively impacting reliability of the transmission system.”¹²² The end-of-life planning criteria further specify, among other things, that “[t]he reliability impact of continued operation of a facility will be determined based on a planning power flow assessment and operational performance considerations.”¹²³

The record establishes that the relevant structures for Lines #2173, #I265, #228, #265, #295, #2008, #200, #2051, #2063, and #156, which are predominantly COR-TEN® steel lattice towers constructed in the 1960s, are approaching the end of their useful service lives.¹²⁴ With the exception of #I265 – an idle line Dominion has already taken out of service – the record also demonstrates system reliability risks if these lines are not in service. Load flow studies,¹²⁵ which Staff verified, show many projected thermal and voltage overloads under various system contingencies when the lines that Dominion proposes to rebuild are modeled as out of service.¹²⁶ Additionally, these lines are part of network loops that provide transmission service to substations and delivery points.¹²⁷ System reliability would therefore be diminished and compromised if these lines – for any individual Project segment or collectively – were to fail due to their aging infrastructure, or if they were removed to address their aging infrastructure without replacement or another system reinforcement.

While Dominion’s end-of-life planning criteria contemplate the use of load flow studies, which, for the Rebuild Project, were used to support the need to address the aging infrastructure on each Project segment, the Company’s Application provided little analysis of the DSM incorporated in these studies.¹²⁸ Dominion appears to include its new energy efficiency programs in load flow modeling: (1) implicitly, if they have lowered load and affected the historical basis of PJM’s load forecast; or (2) explicitly, if Dominion has bid such programs into,

¹²² See, e.g., Ex. 8 (Cizenski) at Attach. MAC-4, p. 18 of 32.

¹²³ *Id.*

¹²⁴ See, e.g., Ex. 2 (Appendix) at 3, 6-12, 78-109; Ex. 8 (Cizenski direct) at 9-10.

¹²⁵ Consistent with the terminology used in Code § 56-46.1 B, my discussion herein refers to “power flow” modeling, studies, or assessments, as “load flow” studies.

¹²⁶ See, e.g., Ex. 2 (Appendix) at 34-62; Ex. 8 (Cizenski) at 11-14.

¹²⁷ See, e.g., Ex. 2 (Appendix) at 5, 7-8, 10-12, 31.

¹²⁸ To the extent DSM investments occur, they could, among other things, defer or eliminate the need for some transmission infrastructure projects. This benefit might not be realized if load forecasts used in load flow studies fail to incorporate, where appropriate, such investments. *Application of Virginia Electric and Power Company, For approval and certification of electric transmission facilities under Va. Code § 56-46.1 and the Utility Facilities Act, Va. Code § 56-265.1 et seq.*, Case No. PUR-2018-00075, 2018 S.C.C. Ann. Rep. 431, 434, Final Order (Nov. 1, 2018).

and they have cleared, PJM's capacity auction.¹²⁹ In my view, such reliance on after-the-fact results and PJM capacity auction activity warrants further inquiry because: (1) laws enacted during the past three General Assembly sessions place an increased emphasis on prospective energy efficiency investments by Dominion,¹³⁰ and (2) PJM has not run a capacity auction since May 2018.¹³¹ As part of its investigation, Staff identified the amount of DSM required to impact the need for each Project segment, all of which far exceeds the amount of existing DSM deployed by Dominion.¹³² The amount of DSM that would impact the need for the Project also far exceeds the amount of projected DSM incorporated in Dominion's planning studies.¹³³ Additionally, the Rebuild Project is, among other things, needed to maintain network transmission service to relevant load areas. Consequently, based on the record, I find the need for the Rebuild Project is unaffected by projected increases in DSM investment by Dominion.

The record is also uncontested that there is no need to rebuild or continue operating Line #156 if, as proposed, Line #2008 is rebuilt and Line #265 is cut into Bull Run Substation.¹³⁴

In sum, I find that the Company has demonstrated reliability needs justifying a transmission system project to address the aging infrastructure on Lines #2173, #228, #265, #295, #2008, #200, #2051, and #2063. I find a demonstrated need for each Project segment.

Alternative Variation of the Loudoun – Bull Run Segment

For the Loudoun – Bull Run segment, Dominion considered the alternative to not cut Line #265 into the Bull Run Substation, but instead rebuild Line #156 to current 230 kV standards and operate it at 115 kV until needed to serve the load area.¹³⁵ This alternative would add approximately \$2 million to the Project cost.¹³⁶ Given the reliability needs supporting the proposed Rebuild Project and the availability of existing right-of-way, I find that the Company's decision to limit its consideration of alternatives to this variation of the Loudoun-Bull Run segment of the Project to be reasonable. The record also demonstrates that the Company's rejection of the more expensive and less robust alternative variation was reasonable. With the retirement of Line #156, the proposed Project allows Dominion to remove one set of existing

¹²⁹ See Ex. 2 (Application) at Appendix, p. 63, n.11 (“Further, because PJM’s load forecast considers the historical non-coincident peak (“NCP”) for each load serving entity (“LSE”) within PJM, it reflects the actual load reductions achieved by DSM programs to the extent an LSE has used DSM to reduce its NCPs.”) and pp. 63-64 (“At the time of this filing, no analyses have been conducted to determine if these new [energy efficiency programs approved in Case No. PUR-2018-00168] qualify to bid into the PJM RPM auctions, and assuming they qualified, no decisions have been made whether to bid these new programs into the PJM RPM auction.”).

¹³⁰ See, e.g., 2018 Va. Acts Ch. 296, Enactment Clause 15 (codified at Code § 56-596.2); 2019 Va. Acts Ch. 748; 2020 Va. Acts Ch. 1193.

¹³¹ See, e.g., *Calpine Corp. et al. v. PJM Interconnection, L.L.C.*, Docket Nos. EL16-49-000 and EL18-178-000, 168 FERC ¶ 61,051, Order on Motion for Supplemental Clarification (July 25, 2019).

¹³² Ex. 8 (Cizenski) at 18, Attach. MAC-5.

¹³³ *Id.* at Attach. MAC-5.

¹³⁴ Ex. 2 (Appendix) at 5-6, 34, 36-37.

¹³⁵ *Id.* at 31-32, 63; Ex. 8 (Cizenski) at 16.

¹³⁶ Ex. 2 (Appendix) at 15-18; Ex. 11.

structures on a portion of the right-of-way without eliminating the ability to locate future lines in the existing right-of-way, should such a need arise in the future.¹³⁷

Cost

The estimated total cost of the proposed Rebuild Project, using weathering steel as the structure material, is approximately \$67.5 million. Of this total estimated cost, approximately \$59.0 million is for transmission line work and \$8.5 million is for substation work. Using galvanized steel as the structure material would increase the estimated Project cost by approximately \$0.8 million.¹³⁸

Route and Environmental Impact

The entire Rebuild Project would use Company-owned property or existing transmission right-of-way occupied for decades by various electric transmission lines, including the lines that would be rebuilt or removed as part of the Project.¹³⁹ The existing transmission line corridor has long coexisted with its surrounding environment, including historic battlefields and other resources discussed above. Additionally, for the Loudoun – Bull Run segment, the proposed Project would remove more than 70 existing structures on a portion of the right-of-way.¹⁴⁰

Based on the preliminary design of the Rebuild Project, the new structures would be taller on average than the existing structures. Attachment 1 to this Report illustrates the expected change in structure heights with line charts that plot the heights of each replacement structure and each existing structure that would be replaced. While the heights of the replacement structures within the existing right-of-way vary from the existing structures, the associated environmental impacts – both negative and positive – would be mostly, if not entirely, incremental given the impacts of the existing structures.

Based on the record of this case – including, but not limited to, the preliminary design heights, visual simulations, photographs of existing structures, and the Rebuild Project's exclusive use of existing right-of-way and Company property – I conclude that the route of the Rebuild Project would reasonably minimize adverse impact on the scenic assets, historic districts,¹⁴¹ and environment of the area concerned.

I also conclude that there are no adverse environmental impacts that should prevent the construction of the Rebuild Project. Dominion should be required to obtain all necessary environmental permits and approvals that are needed to construct and operate the Rebuild Project.

¹³⁷ Ex. 2 (Appendix) at 31.

¹³⁸ *Id.* at 72-73 (all costs are in 2019 dollars).

¹³⁹ *Id.* at 112, 136; Ex. 8 (Cizenski) at 1, 14-15.

¹⁴⁰ *See, e.g.*, Ex. 2 (Appendix) at 31, 124-26.

¹⁴¹ My consideration of the environment of the area included historic resources, regardless of whether such resources contribute to a historic district.

DEQ Report

I recommend that Dominion comply with the summary recommendations of the DEQ Report, with the exception of the four contested recommendations. Additionally, based on the record of this case, I find reasonable Dominion's commitments to: (1) educate its construction team about Stiff goldenrod, Earleaf False foxglove, and Purple milkweed plants before construction and to coordinate with DCR if any such resources are found within the Project area;¹⁴² (2) survey the Project area for songbird nesting colonies if any significant clearing will occur during nesting season and coordinate with DGIF to create appropriate construction restrictions for any colonies found;¹⁴³ and (3) continue coordinating with the FCPA with respect to historical properties and NHPA compliance during the federal wetland permitting process.¹⁴⁴ Additionally, I do not recommend requiring Dominion to develop and implement an invasive species management plan specific to the Project area that is different than the Company's existing comprehensive integrated vegetation management plan for controlling vegetation, including invasive species, throughout the Company's service territory.¹⁴⁵

Material Finish

While community feedback expressed a preference for galvanized structures,¹⁴⁶ Dominion proposes to use weathering steel. Using galvanized structures would increase the estimated Project cost by approximately \$0.8 million. Additionally, galvanized steel would not match the existing weathering steel structures in the transmission corridor.¹⁴⁷ To ensure lower Project cost and to avoid creating a visual mismatch, I recommend adopting Dominion's proposal to use weathering steel structures.

Economic Development

The Rebuild Project will maintain transmission system reliability by replacing aging infrastructure for transmission lines that the evidence in this case demonstrates are needed for system reliability. As such, the Rebuild Project promotes economic development.¹⁴⁸

Project Schedule

Ms. Witschey requested a Project schedule, advance notice, and a Project point of contact.¹⁴⁹ While transmission line construction schedules can change depending on, among other things, the ability to obtain outages,¹⁵⁰ the Company should provide her a Project point of contact to the extent it has not already done so.

¹⁴² Ex. 10 (Carr rebuttal) at 3-4.

¹⁴³ *Id.* at 5-6.

¹⁴⁴ *Id.* at 6-7.

¹⁴⁵ *Id.* at 4-5.

¹⁴⁶ Ex. 2 (Appendix) at 262-63.

¹⁴⁷ *Id.* at 72-73.

¹⁴⁸ *See, e.g.*, Ex. 8 (Cizenski) at 20.

¹⁴⁹ Tr. at 7-8.

¹⁵⁰ Ex. 2 (Appendix) at 145-46.

FINDINGS AND RECOMMENDATIONS

Based on applicable law and the record in this proceeding, I find that:

1. Exhibits 1 through 11, as enumerated in the Proposed Stipulation, are admitted into the record and the Proposed Stipulation is admitted into the record as Exhibit 12.

2. The collective and separate segments of the proposed Rebuild Project are needed to address aging infrastructure on Lines #2173, #228, #265, #295, #2008, #200, #2051, #2063, and to maintain electric transmission system reliability;

3. There is currently no need to rebuild Line #156 if, as proposed by the Company and recommended herein, Line #2008 is rebuilt and Line #265 is cut into Bull Run Substation;

4. The Rebuild Project would maximize the use of existing right-of-way;

5. The Rebuild Project would reasonably minimize adverse impact on the scenic assets, historic districts, and environment of the area concerned;

6. Weathering steel structures – which would be lower cost than galvanized steel and would match existing structures in the transmission corridor – are reasonable to use for the Rebuild Project;

7. The unopposed recommendations in the DEQ Report should be adopted by the Commission as conditions of approval;

8. Dominion should (a) educate its construction team about Stiff goldenrod, Earleaf False foxglove, and Purple milkweed plants before construction and coordinate with DCR if any such resources are found within the Project area; (b) survey the Project area for songbird nesting colonies if any significant clearing will occur during nesting season and coordinate with DGIF to create appropriate construction restrictions for any colonies found; and (c) continue coordinating with the FCPA with respect to historical properties and NHPA compliance during the federal wetland permitting process; and

9. The Rebuild Project would support economic development.

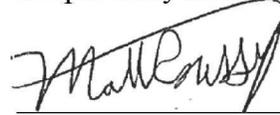
Accordingly, I **RECOMMEND** the Commission enter an order that:

1. **ADOPTS** the findings in this Report;
2. **AUTHORIZES** the Company to construct and operate the Rebuild Project, subject to the findings and conditions recommended herein;
3. **ISSUES** an appropriate CPCN(s) for the Rebuild Project; and
4. **DISMISSES** this case from the Commission's docket of active cases.

COMMENTS

The parties are advised that pursuant to Rule 5 VAC 5-20-120 C of the Commission's Rules of Practice and Procedure, any comments to this Report must be filed with the Clerk of the Commission in writing, in an original and fifteen copies, on or before May 22, 2020. If not filed electronically, the mailing address to which any such filing must be sent is Document Control Center, P.O. Box 2118, Richmond, Virginia 23218. Any party filing such comments shall attach a certificate to the foot of such document certifying that copies have been mailed or delivered to all counsel of record and any such party not represented by counsel.

Respectfully submitted,



D. Mathias Roussy, Jr.
Hearing Examiner

Document Control Center is requested to send a copy of the above Report to all persons on the official Service List in this matter. The Service List is available from the Clerk of the State Corporation Commission, c/o Document Control Center, 1300 East Main Street, Tyler Building, First Floor, Richmond, VA 23219.

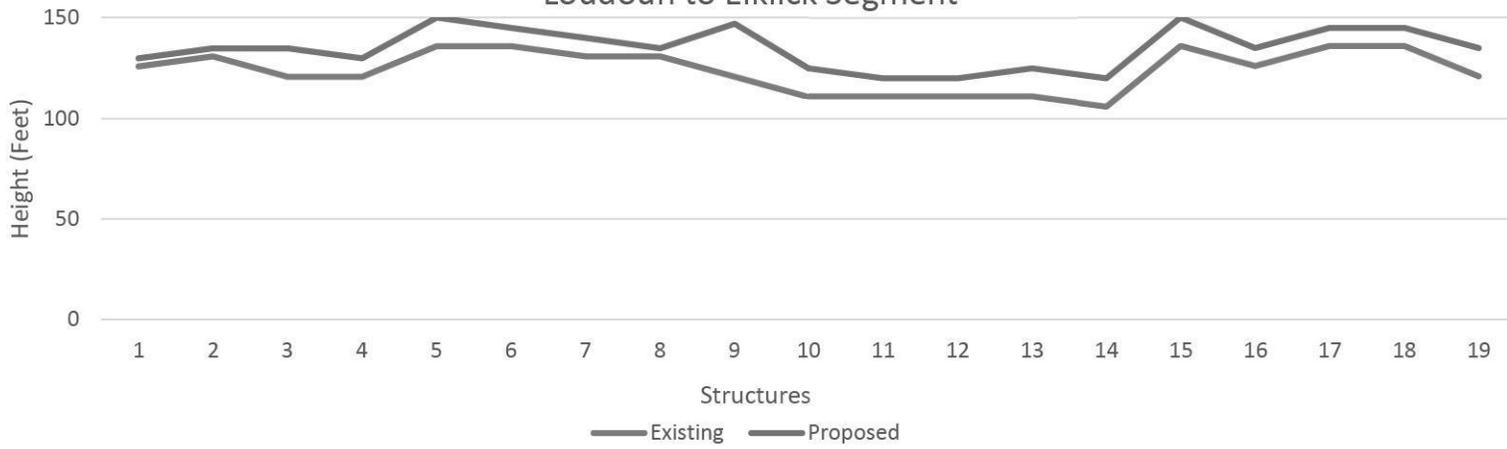
ATTACHMENT 1
TO HEARING EXAMINER'S REPORT

PUR-2019-00128

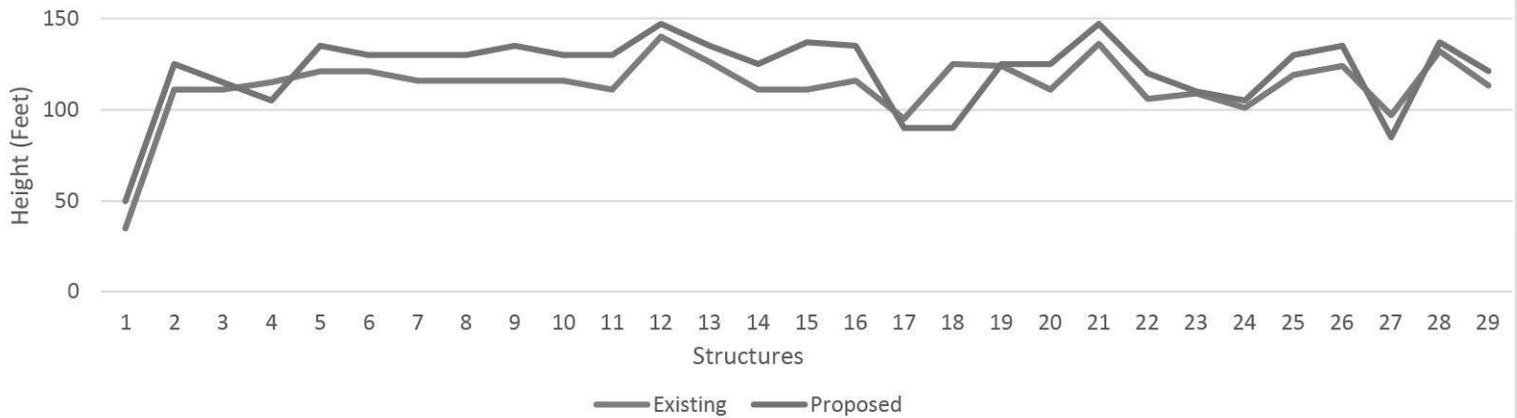
HEIGHTS FOR 1:1 STRUCTURE REPLACEMENTS

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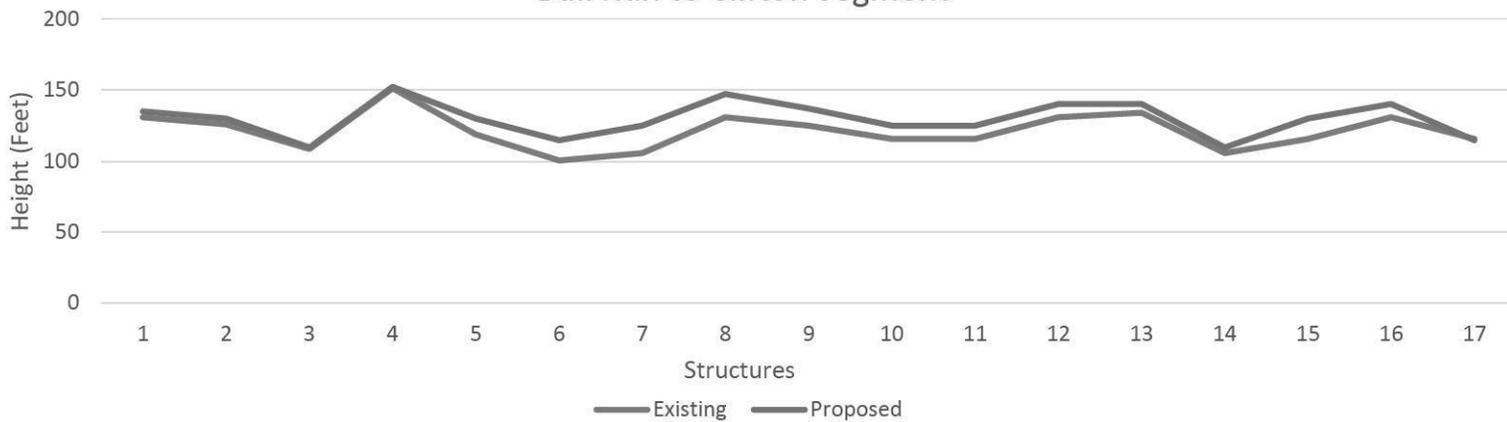
Loudoun to Elklick Segment



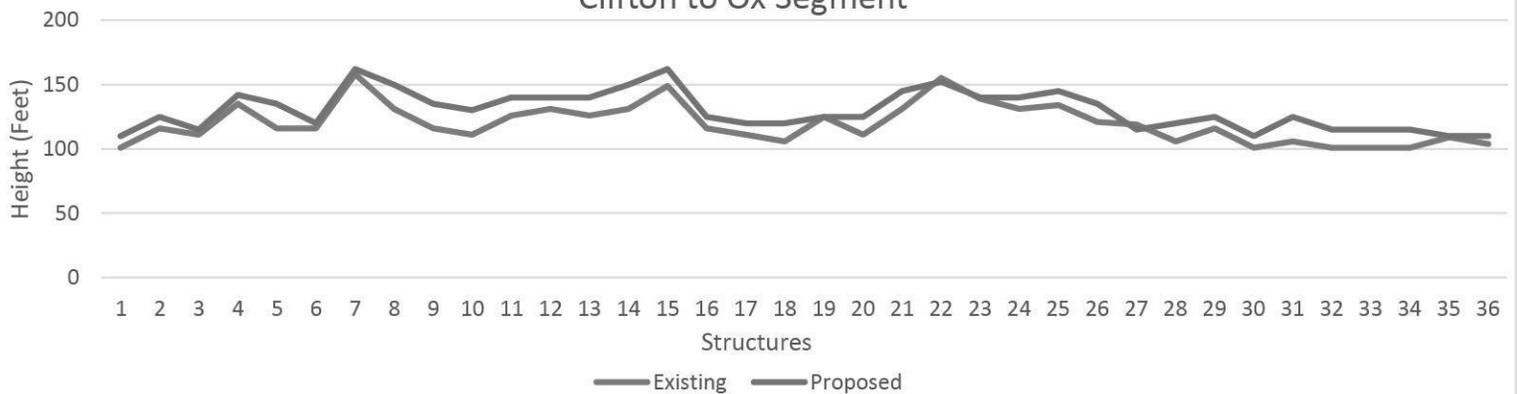
Elklick to Bull Run Segment



Bull Run to Clifton Segment



Clifton to Ox Segment



NOTES

X-axis numbering correlates to chart numbers, and not structure numbers

Structure heights inclusive of cellular equipment and exclusive of foundation reveal (Appx. 177, 180)

Two 105-foot single pole structures not included in Elklick - Bull Run 1:1 figures; they are additional structures (Appx. 178, 184)

One 50-foot three pole structure is not included in Loudoun - Elklick 1:1 figures; it is treated as an additional structure (Appx. 177)

Three 110-foot structures to be removed are not included in the Clifton - Ox 1:1 figures (Appx. 179-80, 190-95)

Source: Appx. at 177-95

LOUDOUN TO ELKLICK					ELKLICK TO BULL RUN				
Chart #	Structure #	Existing Height	Proposed Height	Delta	Chart #	Structure #	Existing Height	Proposed Height	Delta
1	2008/2	126	130	4	1	295/201	35	50	15
2	2008/3	131	135	4	2	2008/22	111	125	14
3	2008/4	121	135	14	3	2008/23	111	115	4
4	2008/5	121	130	9	4	2008/24	115	105	-10
5	2008/7	136	150	14	5	295/24	121	135	14
6	2008/8	136	145	9	6	295/25	121	130	9
7	2008/9	131	140	9	7	295/26	116	130	14
8	2008/10	131	135	4	8	295/27	116	130	14
9	2008/11	121	147	26	9	295/28	116	135	19
10	2008/12	111	125	14	10	295/29	116	130	14
11	2008/13	111	120	9	11	295/30	111	130	19
12	2008/14	111	120	9	12	295/31	140	147	7
13	2008/15	111	125	14	13	295/32	126	135	9
14	2008/16	106	120	14	14	295/33	111	125	14
15	2008/17	136	150	14	15	295/34	111	137	26
16	2008/18	126	135	9	16	295/35	116	135	19
17	2008/19	136	145	9	17	295/35A	95	90	-5
18	2008/20	136	145	9	18	295/36A	125	90	-35
19	2008/21	<u>121</u>	<u>135</u>	<u>14</u>	19	295/36	124	125	1
	average	124.2	135.1	10.9	20	295/37	111	125	14
					21	295/38	136	147	11
					22	295/39	106	120	14
					23	295/40	109	110	1
					24	295/41	101	105	4
					25	295/42	119	130	11
					26	295/43	124	135	11
					27	295/44	97	85	-12
					28	295/45	<u>132</u>	<u>137</u>	<u>5</u>
						average	113.3	121.2	7.9

		<u>BULL RUN TO CLIFTON</u>					<u>CLIFTON TO OX</u>		
		<u>Existing</u>	<u>Proposed</u>				<u>Existing</u>	<u>Proposed</u>	
<u>Chart #</u>	<u>Structure #</u>	<u>Height</u>	<u>Height</u>	<u>Delta</u>	<u>Chart #</u>	<u>Structure #</u>	<u>Height</u>	<u>Height</u>	<u>Delta</u>
1	265/20	131	135	4	1	2063/62	101	110	9
2	265/19	126	130	4	2	2063/63	116	125	9
3	265/18	109	110	1	3	2063/64	111	115	4
4	265/17	151	152	1	4	2063/65	135	142	7
5	265/16	119	130	11	5	2063/66	116	135	19
6	265/15	101	115	14	6	2063/67	116	120	4
7	265/14	106	125	19	7	2063/69	158	162	4
8	265/13	131	147	16	8	2063/71->70	131	150	19
9	265/12	125	137	12	9	2063/72->71	116	135	19
10	265/11	116	125	9	10	2063/74->72	111	130	19
11	265/10	116	125	9	11	2063/75->73	126	140	14
12	265/9	131	140	9	12	2063/76->74	131	140	9
13	265/8	134	140	6	13	2063/77->75	126	140	14
14	265/7	106	110	4	14	2063/78->76	131	150	19
15	265/6	116	130	14	15	2063/80->77	149	162	13
16	265/5	131	140	9	16	2063/81->78	116	125	9
17	265/4	<u>116</u>	<u>115</u>	<u>-1</u>	17	2063/82->79	111	120	9
	average	121.5	129.8	8.3	18	2063/83->80	106	120	14
					19	2063/84->81	125	125	0
					20	2063/85->82	111	125	14
					21	2063/86->83	131	145	14
					22	2063/87->84	155	152	-3
					23	2063/88->85	139	140	1
					24	2063/89->86	131	140	9
					25	2063/90->87	134	145	11
					26	2063/91->88	121	135	14
					27	2063/92->89	119	115	-4
					28	2063/93->90	106	120	14
					29	2063/94->91	116	125	9
					30	2063/95->92	101	110	9
					31	2063/96->93	106	125	19
					32	2063/97->94	101	115	14
					33	2063/98->95	101	115	14
					34	2063/99->96	101	115	14
					35	2063/100->97	109	110	1
					36	2063/101->98	<u>104</u>	<u>110</u>	<u>6</u>
						average	119.9	130.2	10.3